

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

**TENTATIVE
MONITORING AND REPORTING PROGRAM NO. R9-2004-0154
NPDES PERMIT NO. CA0001368**

**WASTE DISCHARGE REQUIREMENTS
FOR
DUKE ENERGY SOUTH BAY, LLC
SOUTH BAY POWER PLANT
SAN DIEGO COUNTY**

This Monitoring and Reporting Program (MRP) shall become effective with the adoption of Order No. R9-2004-0154 and supersedes MRP No. 96-05 in its entirety.

PURPOSE

This monitoring program is intended to:

- Document short-term and long-term effects of the discharge on receiving waters, sediments, biota, and beneficial uses of the receiving water.
- Determine compliance with NPDES permit terms and conditions.
- Be used to determine compliance with water quality objectives.

A. MONITORING PROVISIONS

1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in Order No. R9-2004-0154 or in this monitoring and reporting program and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Regional Board.
2. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration and operation of acceptable

flow measurement devices can be obtained from the following references:

- (a) "A Guide to Methods and Standards for the Measurement of Water Flow," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 96 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD Catalog No. C13.10:421.)
 - (b) "Water Measurement Manual," U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington D.C. 20402. Order by Catalog No. 172.19/2:W29/2, Stock No. S/N 24003-0027.)
 - (c) "Flow Measurement in Open Channels and Closed Conduits," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Services (NTIS) Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.)
 - (d) "NPDES Compliance Sampling Manual," U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp. (Available from the General Services Administration (8FFS), Centralized Mailing Lists Services, Building 41, Denver Federal Center, CO 80225.)
- 3. Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved under Title 40, United States Code of Federal Regulations (CFR), Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act" as amended, unless other test procedures are specified in Order No. R9-2004-0154 and/or in this monitoring and reporting program and/or by the Regional Board.
 - 4. Duplicate copies of the monitoring reports signed and certified as required by *Reporting Requirement G.14* of Order No. R9-2004-0154 must be submitted to the USEPA and Regional Board at the addresses listed in *Reporting Requirement G.16* of Order No. R9-2004-0154.
 - 5. If the discharger monitors any pollutant more frequently than required by Order No. R9-2004-0154 or by this monitoring and reporting program, using test procedures approved under 40 CFR Part 136, or as specified in Order No. R9-2004-0154 or this monitoring and reporting program or by the Regional Board, the results of this monitoring shall be included in the calculation and reporting of

the data submitted in the discharger's monitoring report. The increased frequency of monitoring shall also be reported.

6. The discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by Order No. R9-2004-0154 and this monitoring and reporting program, for a period of at least five years from the date of the sample, measurement, report, or application. This period may be extended by request of the Regional Board at any time.
7. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in Order No. R9-2004-0154 or this monitoring and reporting program.
8. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services or a laboratory approved by the Regional Board.
9. The discharger shall report all instances of noncompliance not reported under *Reporting Requirement G.5, G.6, and G.9* of Order No. R9-2004-0154 at the time monitoring reports are submitted. The reports shall contain the information listed in *Reporting Requirement G.6*.
10. Records of monitoring information shall include:
 - (a) The date, exact place, and time of sampling or measurements;
 - (b) The individual(s) who performed the sampling or measurements;
 - (c) The date(s) analyses were performed;
 - (d) The individual(s) who performed the analyses;
 - (e) The analytical techniques or methods used; and
 - (f) The results of such analyses.

In addition, records of all cooling water intake monitoring, effluent monitoring, and receiving water monitoring shall include:

- (g) The applicable tide table for the days on which sampling/monitoring was conducted; and

- (h) The moon phase (in days after the new moon) for the days on which sampling/monitoring was conducted.
- 11. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices.
- 12. The discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. An annual report shall be submitted by April 1 of each year which summarizes the QA activities for the previous year. Duplicate chemical analyses must be conducted on a minimum of ten percent of the samples or at least one sample per month, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples. When requested by USEPA or the Regional Board, the discharger will participate in the NPDES discharge monitoring report QA performance study. The discharger should have a success rate equal or greater than 80 percent.
- 13. Laboratory method detection limits (MDLs) and practical quantitation levels (PQLs) shall be identified for each non-CTR constituent in the matrix being analyzed with all reported analytical data. Acceptance of data shall be based on demonstrated laboratory performance.
- 14. Pursuant to Section 2.4 of the Implementation Policy, CTR pollutants shall comply with specific reporting and monitoring requirements, as listed in Attachment 3.
- 15. Monitoring results shall be reported at intervals and in a manner specified in Order No. R9-2004-0154 or in this monitoring and reporting program.
- 16. This monitoring program may be modified by the Regional Board, as appropriate.

B. COOLING WATER INTAKE MONITORING

- 1. Sampling/Monitoring Location
Cooling water intake sampling/monitoring shall be conducted at the west end of the intake basin, halfway across the intake channel, at Station I (see Attachment 1).

2. Cooling water intake monitoring shall be conducted as specified below:

Parameter	Units	Sample Type ^{1/2/}	Minimum Frequency of Analysis	Reporting Frequency
Temperature	°F	Measurement	Continuous ^{3/}	Monthly
Dissolved Oxygen	mg/l & percent saturation	Grab or Measurement *	Monthly ^{4/10/12}	Monthly
Total Suspended Solids	mg/l lb/day	Grab	Monthly ^{4/}	Monthly
pH	pH units	Grab	Monthly ^{5/}	Monthly
Acute Toxicity ^{6/}	6/	6/	Monthly	Monthly
Chronic Toxicity ^{7/}	TUc	24-hr. composite	Monthly	Monthly
Salinity	ppt	Grab or Measurement *	Monthly	Monthly
Transparency	Meters (Secchi Disk)	Measurement	Monthly ^{4/10/12}	Monthly

* within 2 feet of surface and just above the bottom

C. COOLING WATER EFFLUENT MONITORING^{8/}

1. Sampling/Monitoring Location

Sampling/monitoring location for the cooling water discharge from the South Bay Power Plant shall be as follows (see Attachment 1):

Sampling/Monitoring Location Identification	Sampling/Monitoring Location	Comment
S2	At the west end of the discharge basin (at the property line), halfway across the discharge channel (at approximately Latitude 32° 36' 48", North; Longitude 117° 05' 52", West)	All parameters (specified in <i>Section C.2</i> of the MRP) shall be monitored at this location <u>except</u> temperature.
S1*	At the weather station location (Latitude 32° 36' 46.6",	Only discharge temperature shall be

	North; Longitude 117° 06' 04.5", West), approximately 1000 feet downstream of S2.	monitored at this location.
--	---	-----------------------------

* The discharger shall conduct monitoring of all parameters including temperature, at location S2 (property line), by the expiration date of the Order..

2. Cooling water effluent monitoring shall be conducted as specified below:

Parameter	Units	Sample Type ^{1/2/}	Minimum Frequency of Analysis	Reporting Frequency
Flow	MGD	--	Continuous	Monthly
Temperature	°F	Measurement	Continuous ^{3/}	Monthly
Dissolved Oxygen	mg/l & percent saturation	Grab or Measurement	Monthly ^{4/10}	Monthly
Total Suspended Solids	mg/l lb/day	Grab	Monthly ^{4/10}	Monthly
Total Chlorine Residual ^{9/}	ug/l lb/day	Grab	Weekly ¹⁰	Monthly
pH	pH units	Grab	Monthly ^{5/10}	Monthly
Acute Toxicity ^{6/}	6/	6/	Monthly ^{10/}	Monthly
Chronic Toxicity ^{7/}	TUc	24-hr. composite	Monthly ^{10/}	Monthly
Grease and Oil	mg/l lb/day	Grab	Monthly ^{10/}	Monthly
Copper ^{11/13}	ug/l lb/day	24-hr. composite	Monthly ^{10/}	Monthly
Cadmium ^{13/}	ug/l lb/day	24-hr. composite	Monthly ^{10/}	Monthly
Lead ^{13/}	ug/l lb/day	24-hr. composite	Monthly ^{10/}	Monthly
Mercury ^{13/}	ug/l lb/day	24-hr. composite	Monthly ^{10/}	Monthly
Arsenic ^{13/}	ug/l lb/day	24-hr. composite	Monthly ^{10/}	Monthly
Chromium (total) ^{13/}	ug/l lb/day	24-hr. composite	Monthly ^{10/}	Monthly
Chromium (hexavalent) ^{13/}	ug/l lb/day	24-hr. composite	Monthly ^{10/}	Monthly
Silver ^{13/}	ug/l	24-hr. composite	Monthly ^{10/}	Monthly

Parameter	Units	Sample Type ^{1/2/}	Minimum Frequency of Analysis	Reporting Frequency
	lb/day			
Zinc ^{13/}	ug/l lb/day	24-hr. composite	Monthly ^{10/}	Monthly

3. Resampling of California Toxic Rule (CTR) Pollutants

Pursuant to *Reporting Requirement G.13* of Order No. R9-2004-0154, the discharger shall re-sample and analyze all 126 CTR priority pollutants listed in 40 CFR 131.38(b)(1), in the cooling water effluent, in 2008. The results of this analysis shall be submitted in conjunction with the *Report of Waste Discharge* for the renewal of the Order No. R9-2004-0154, not later than 180 days prior to the expiration date of the Order.

D. RECEIVING WATER MONITORING

Receiving water monitoring shall be conducted as specified below. Sampling, preservation, and analysis shall be by methods described in the discharger's report titled "*SBPP Cooling Water System Effects on San Diego Bay, Volume 1: Compliance with Section 316(a) of the Clean Water Act for the South Bay Power Plant, May 2004*", unless other methods are specified in Order No. R9-2004-0154, this monitoring and reporting program, or by the Regional Board. The receiving water monitoring requirements may be modified by the Regional Board at any time.

1. Station Locations

Receiving waters shall be monitored at the following designated stations (the approximate locations of the stations are shown on Attachment 2 to this monitoring program):

S1, E7, E5, F4, F3, F2, E4, E3, D4, C3, A3, N2

2. Receiving water monitoring shall be conducted in accordance with the following schedule:

Parameter	Units	Sample Type	Minimum Frequency of Analysis	Reporting Frequency
Temperature	°F	Measurement (at 2 foot depth	Monthly ^{10/12}	Monthly

Parameter	Units	Sample Type	Minimum Frequency of Analysis	Reporting Frequency
		intervals)		
Dissolved Oxygen	mg/l & percent saturation ^{11/}	Grab or Measurement *	Monthly ^{4/10/12}	Monthly
Transparency	Meters (Secchi Disk)	Measurement	Monthly ^{4/10/12}	Monthly
Salinity	ppt	Grab or Measurement *	Monthly	Monthly
Copper ^{11/}	ug/l	Grab	Monthly ^{10/}	Monthly
Cadmium ^{13/}	ug/l	Grab	Monthly ^{10/}	Monthly
Lead ^{13/}	ug/l	Grab	Monthly ^{10/}	Monthly
Mercury ^{13/}	ug/l	Grab	Monthly ^{10/}	Monthly
Arsenic ^{13/}	ug/l	Grab	Monthly ^{10/}	Monthly
Chromium (total) ^{13/}	ug/l	Grab	Monthly ^{10/}	Monthly
Chromium ^{13/} (hexavalent)	ug/l	Grab	Monthly ^{10/}	Monthly
Silver ^{13/}	ug/l	Grab	Monthly ^{10/}	Monthly
Zinc ^{13/}	ug/l	Grab	Monthly ^{10/}	Monthly
Total Chlorine** Residual	ug/l lb/day	Grab	Weekly ^{9/10/}	Monthly

* within 2 feet of surface and just above the bottom.

** Total chlorine residual receiving water monitoring shall be conducted at stations E7 and S1 only.

E. CHLORINATION LOG

The discharger shall maintain a chlorination log which records all chlorination dates, times, durations, rates (pounds per day), and dosages (ug/l) for each unit of the South Bay

Power Plant and the times of chlorine and toxicity monitoring. A copy of the log shall be submitted monthly.

F. ANNUAL SUMMARY OF MONITORING DATA

By March 1 of each year, the discharger shall submit an annual report to the Regional Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. In addition, the discharger shall discuss the compliance record and the corrective actions taken or planned, which may be needed to bring the discharger into full compliance with the requirements of Order No. R9-2004-0154.

G. MONITORING REPORT SCHEDULE

1. Monitoring reports shall be submitted to the Regional Board according to the dates in the following schedule:

Report Type	Report Period	Report Due
Monthly Discharge and Receiving Water Monitoring Reports	Each month	First day of the second month after the month of sampling
Annual Summary Reports	January - December	March 1 st of each year

2. Special Supplemental Study Reports as required by Order No. R9-2004-0154, *Special Supplemental Studies*, E, shall be submitted to the Regional Board according the dates in the following schedule:
 - (a) Section 316(b) CWA Updated Comprehensive Demonstration Study
 - (1) *Proposal for Information Collection* is due no later than 1 year and 180 days after adoption of Order No. R9-2004-0154.
 - (2) Final Report for *Comprehensive Demonstration Study* is due no later than 3 years and 180 days after adoption of Order No. R9-2004-0154.
 - (b) Workplan for Relocation of Thermal Discharge Limit Compliance Point to the Property Line (S2)

- (1) A Thermal Discharge Compliance Point Relocation Workplan shall be submitted no later than 24 months after adoption of the Order.
 - (2) A Progress Report on the development of the Workplan shall be submitted no later than 30 months after adoption of the Order.
 - (3) A Final Technical Report shall be due no later than 24 months prior to the expiration date of the Order.
- (c) Special Sunset Study
- (1) The Special Sunset Study Workplan shall be submitted no later 24 months after adoption of the Order, in conjunction with the Thermal Discharge Compliance Point Relocation Workplan.
 - (2) A Progress Report on the development of the Workplan shall be submitted no later than 30 months after adoption of the Order.
 - (3) A Final Technical Report shall be due no later than 24 months prior to the expiration date of the Order.

H. ENDNOTE REFERENCES

1. A grab sample is defined as an individual sample of at least 100 milliliters collected over a period not exceeding 15 minutes. Grab samples shall be collected over a shorter period if necessary to ensure that the constituent/parameter concentration in the sample is the same as that at the sampling location at the time the sample is collected.
2. A composite sample is defined as a combination of at least eight sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants, aliquots must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.
3. Temperature shall be recorded at a minimum frequency of once every two hours. The average intake and discharge temperatures for each calendar day shall be reported. The average and maximum temperature difference between intake and discharge temperatures for each calendar day shall also be reported.

4. All applicable intake water, effluent, and receiving water monitoring for dissolved oxygen, total suspended solids, and transparency shall be conducted between noon and 5:00 PM.
5. pH shall be determined only when total chlorine residual is determined.
6. Within 30-days upon adoption of Order No. R9-2004-0154, intake water and effluent acute toxicity tests shall be conducted in accordance with Endnote 2 of Order No. R9-2004-0154. Samples for acute toxicity tests conducted in accordance with Endnote 2 of Order No. R9-2004-0154 shall be 24-hr. composites.
7. Chronic toxicity tests measure sublethal effects (e.g., reduced growth or reproduction) on organisms exposed to test waters (e.g. effluent) compared to that of organisms exposed to control waters.

(a) Test Species and Methods

Chronic toxicity shall be determined using the approved tests listed in Table III-1 (*Approved Tests – Chronic Toxicity, TUC*), Appendix III (*Standard Monitoring Procedures*), of the 2001 California Ocean Plan (effective

December 3, 2001). Chronic Toxicity (TUC) shall be expressed in Toxic Units Chronic (TUC), where:

$$TUC = \frac{100}{NOEL}$$

and the NOEL (No Observed Effect Level) is expressed as the maximum percentage of test water that causes no observable effect on a test organism, as determined by the results of the approved critical life stage toxicity tests, listed in Table III-1.

Starting 4th quarter of 2004, the discharger shall conduct critical life stage toxicity tests with at least three species (one vertebrate, one invertebrate, and one plant) approved by the Regional Board. After this initial screening period, chronic toxicity monitoring shall be conducted using the species determined to be most sensitive during the screening period. Each year, in a different month than the previous screening period(s), the discharger shall re-screen, using species approved by the Regional Board. After each re-screening period, chronic toxicity monitoring shall be conducted using the species determined to be the most sensitive during the most recent re-screening period.

(b) Quality Assurance

Unless the test method specifies the use of lab water, dilution and control water shall be obtained from a location unaffected by the South Bay Power Plant discharge and approved by the Regional Board. If the dilution water is different than the culture water, then culture water shall be used in a second control.

Concurrent testing with reference toxicants shall be conducted and the results shall be reported with the test results. If either the reference toxicant tests or the test water tests do not meet all the test acceptability criteria specified for the test method, the discharger shall re-sample and re-test as soon as possible.

8. Effluent samples shall be collected and measurements shall be made after the corresponding intake water samples are collected and measurements are made. The time interval between intake water sample collection and measurement and the corresponding effluent sample collection and measurement shall closely approximate the cooling water transit time from the intake water monitoring/sampling location to the effluent monitoring/sampling location.
9. Total chlorine residual concentrations for effluent and receiving water shall be determined for a complete chlorination cycle that occurs between noon and 6:00 p.m. A good faith effort shall be made to determine total residual chlorine concentrations associated with chlorination of each unit that is chlorinated during the chlorination cycle. As a minimum, such a good faith effort shall consist of determining total chlorine residual concentrations associated with chlorination of at least two units when three or four units are chlorinated during the chlorination cycle, and associated with at least one unit when one or two units are chlorinated during the chlorination cycle.

Samples shall be collected and analyzed for total chlorine residual concentrations at times when concentrations are anticipated to be at or near their highest (i.e. when cooling water from the second half of the period in which a unit is chlorinated passes the sampling/monitoring location).

10. Sampling shall be conducted on weekdays (Monday through Friday) only.
11. Discharge and receiving water samples for copper shall be analyzed according to EPA Method 1638 or 1640. Method 1638 (ICP/MS) or 1640 (On-Line Chelation) will eliminate the sodium-argon complex before the sample is tested for copper.
12. Temperature and transparency of receiving water shall be determined whenever dissolved oxygen is determined. The dissolved oxygen and transparency values at the receiving water stations shall be compared to the corresponding values at the intake, for monthly monitoring results. The ratio of the two values shall be

reported.

13. Pursuant to Section 2.4 of the Implementation Policy, CTR pollutants shall comply with specific reporting and monitoring requirements, as listed in Attachment 3 of this MRP.

Ordered by _ TENTATIVE____
JOHN H. ROBERTUS
Executive Officer
August 11, 2004

Tentative Monitoring and Reporting
Program No. R9-2004-0154

Public Notification Date: June 25, 2004
Proposed Adoption Date: August 11, 2004

Attachment 1 to Monitoring and Reporting Program No. R9-2004-0154

South Bay Power Plant Intake and Effluent Sampling Locations

Tentative Monitoring and Reporting
Program No. R9-2004-0154

Public Notification Date: June 25, 2004
Proposed Adoption Date: August 11, 2004

Attachment 2 to Monitoring and Reporting Program No. R9-2004-0154

South Bay Power Plant Receiving Water Monitoring Stations

Attachment 3 to Monitoring and Reporting Program No. R9-2004-0154

Monitoring and Reporting Requirements for CTR Pollutants

The following information must be included in the monitoring reports for CTR pollutants:

1. Laboratory Requirements
The laboratory analyzing the monitoring samples shall be certified by the Department of Health Services in accordance with the provisions of Water Code Section 13176 and must include quality assurance/quality control data with their reports.
2. Minimum Levels (ML)
The minimum levels are in accordance with the values listed in Tables 2a through 2d of the Implementation Policy.
3. Method Detection Limit (MDL)
The method detection limit for the laboratory shall be determined by the procedure found in 40 Code of Federal Regulations (CFR) Part 136 (revised as of May 14, 1999).
4. Reporting Protocols
The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols (Implementation Policy §2.4.4):
 - (a) Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e. the measured chemical concentration in the sample).
 - (b) Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.
 - (c) For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory, if such information is available, may include numerical estimates of the data quantity for the reported result. Numerical estimates of data quantity may be percent accuracy (\pm a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.
 - (d) Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

5. Data Format

The monitoring report shall contain the following information for each pollutant:

- (a) The name of the pollutant.
- (b) The analytical results of the effluent monitoring.
- (b) The applicable Minimum Level (ML) as specified in Tables 2a through 2d of the Implementation Policy.
- (d) The laboratory's current Method Detection Limit (MDL), as determined by the procedure found in 40 CFR Part 136 (revised as of May 14, 1999).